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10/627,667	07/28/2003	Michael Britton	50821-1 /aba	4445

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EXAMINER

ALSOMIRI, ISAM A

ART UNIT PAPER NUMBER

3662

DATE MAILED: 05/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/627,667

Applicant(s)

BRITTON ET AL.

Examiner

Isam A Alsomiri

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 9 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim limitation "similar amounts of energy" is not clear. Its not clear what is meant by the claimed limitation "similar". How similar?

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1-2, 7, 9-10, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al. US 2003/0197126. Referring to claims 1 and 9,** Sato discloses in figure 1 a sensor system comprising: at least a first and second transmit signal chain for transmitting signals at respective first and second frequencies (see figure 2); a first and second receive signal chain for receiving reflections of the signal transmitted by the corresponding first and second transmit signal chains; and a signal processing unit for evaluating respective reflections received by the first and second receive signal chains to determine whether or not an object is composed of one type of material or of another type of material (see Abstract), the evaluation comprising a comparison of the respective reflections received by the first and second receive signal chains to a benchmark that indicates whether or not an object is of one type of material (tobacco leaf) or another type of material (plastic); its inherent that the first and second frequencies are selected such that a different amount of energy from signals transmitted at the first frequency is reflected by materials of one type than from signals transmitted at the second frequency, and where similar amounts of energy are reflected by objects of another type from signals transmitted at both the first and the second frequencies (see page 3 [0043] – [0050]).

**Referring to claims 2 and 10,** its inherent that Sato teaches the signal processor calculates a magnitude ratio of the respective reflections received by the first and second receive signal chains to know the difference between the signals, which is then compared to the benchmark (see figure 2 and page 3 [0047]).

**Referring to claims 7 and 15**, Sato teaches the objects of one type of material are animate (leaf) and the objects of another type of material are inanimate objects (plastic) (see page 3 [0043] – [0050]).

**Claims 1 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Caulfield US 2002/0159334.** Caulfield teaches discloses in figure 1 a sensor system comprising: at least a first and second transmit signal chain for transmitting signals at respective first and second frequencies; a first and second receive signal chain for receiving reflections of the signal transmitted by the corresponding first and second transmit signal chains; and a signal processing unit for evaluating respective reflections received by the first and second receive signal chains to determine whether or not an object is composed of one type of material or of another type of material (see page 2 [0014])), the evaluation comprising a comparison of the respective reflections received by the first and second receive signal chains to a benchmark that indicates whether or not an object is of one type of material [0014] or another type of material (signature); its inherent that the first and second frequencies are selected such that a different amount of energy from signals transmitted at the first frequency is reflected by materials of one type than from signals transmitted at the second frequency, and where similar amounts of energy are reflected by objects of another type from signals transmitted at both the first and the second frequencies (see page 3 [0043] – [0050]).

**Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield US 2002/0159334.** Referring to claim 8, Caulfield is silent about the underground

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detectors mounted underside of a vehicle. However, underground detectors mounted underside of a vehicle is well known; which include between the front and rear wheel assemblies. It would have been obvious to modify Caulfield's system to mount the system under the vehicle to move easily from one location to another easily.

**Referring to claim 16**, Caulfield is silent about the step of subtracting static clutter estimation from the respective reflections received at the first and second frequencies. However, filtering static clutter estimation from reflection is well known, and include a known noise level may be eliminated or compensated. It would have been obvious to modify Caulfield's system to subtract static clutter from the reflections to avoid unwanted detections and false detections.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 3, 5, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. US 2003/0197126 in view of Caulfield US 2002/0159334.** Sato teaches transmitting signals at different frequencies (see figure 2); Sato is silent about selecting the frequencies one from c-band and the other from k-band or the first and second signals are both acoustic frequencies. Caulfield teaches a system to identify material based on reflection from the target (see figure 1); Caulfield teaches using electromagnetic or acoustic frequencies (see Abstract). Therefore, Sato's system is not limited to infrared rays, it would be obvious to use

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radar wavelength from all ranges or acoustic signals based on the material to identify, some material react differently to different types of energy signals, and the selection of the transmitted signals whether acoustic or electromagnetic (all ranges) is obvious to implement based on the material to be detected.

**Claims 4 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. US 2003/0197126 in view of Caulfield US 2002/0159334 as applied to claims 3, 5, 11, or 13 above, and further in view of Salmon.** The combination of Sato and Caulfield do not teach the reflections are decomposed into in-phase and quadrature channels of both the first and second frequencies. However, evaluating the in-phase and quadrature parts of the signal is well known. Salmon teaches a similar system which detects and determine objects concealed or buried (see Abstract), including generating the in-phase and quadrature components of the reflection for processing (see page 3 [0040]). It would have been obvious to obtain the real and complex (quadrature/in-phase) components of the returns for processing to simplify processing of the signals and to present the spectrum accurately within the signal bandwidth.

**Claims 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. US 2003/0197126.** Sato is silent about the step of subtracting static clutter estimation from the respective reflections received at the first and second frequencies. However, filtering static clutter estimation from reflection is well known, and include a known noise level may be eliminated or compensated. It would have been obvious to modify Sato's system to subtract static clutter from the reflections to avoid unwanted detections and false detections.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited to (Lovegren et al.; Yang et al.; Liedtke et al.; Rix et al.; Donskoy et al.; Rogers et al.; Annee et al.; Durley et al.) show various systems for classifying or distinguishing material by analyzing the reflection from transmitted acoustic or electromagnetic signals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isam A Alsomiri whose telephone number is 703-305-5702. The examiner can normally be reached on Monday-Thursday and every other Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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April 30, 2004



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